Kramer Electronics, Ltd.

USER MANUAL

Model:

840H

HDMI Pattern Generator

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Thank you for purchasing the Kramer **840H** *HDMI Pattern Generator*, which is ideal for: testing and adjusting flat panel LCD displays, projectors, plasmas and HDMI cables, as well as testing the refresh rates of LCD displays by using the motion patterns.

Note, that the Kramer 840H is identical to the 840HDMI; just the name has changed replacing the suffix "HDMI" by "H" (according to the HDMI Guideline).

Each package includes the following items:

- **840H** *HDMI Pattern Generator*
- Power supply
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high-performance high-resolution cables[3]

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from our Web site: http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

3 Overview

The **840H** is a high performance HDMI Video test pattern generator. It displays 32 preset patterns at 11 popular computer and HD video resolutions including several unique patterns incorporating motion. The HDMI output signal includes: SVGA (800x600), XGA (1024x768), SXGA (1280x1024), 1400x1050, 852x480, 1280x720, 1366x768, 1440x900, 720x480, 1920x1080, and 1920x540. All resolutions are at 60Hz.

Note that audio is NOT embedded in the HDMI signal.

In particular, the DigiTOOLS® **840H** features:

- An HDMI output
- Seven control buttons: SVGA, XGA, SXGA, 1400x1050, Wide (On), PATTERN – and PATTERN +
- A 7-segment display that indicates the pattern number
- An on board EERROM that saves the last setting used

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your Kramer **840H** away from moisture, excessive sunlight and dust

Caution – No operator-serviceable parts inside unit.

Warning – Use only the Kramer Electronics input power wall adapter that is provided with this unit[1].

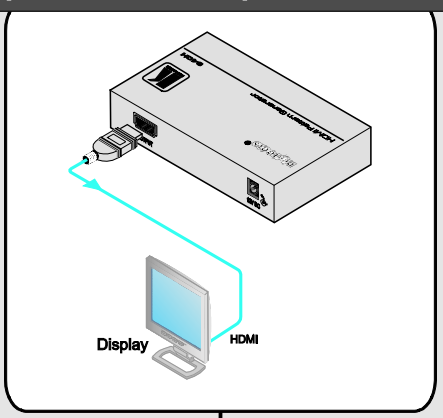
Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

1 For example: part number 2535-000251

3.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

Step 1: Connect the output - see section 5.1

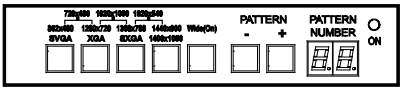


Step 2: Connect the power

Step 3: Operate the unit - see section 5.1

1 Select any of the following resolutions (all are @ 60Hz):

- SVGA (800x600)
- XGA (1024x768)
- SXGA (1280x1024)
- 1400x1050
- 852x480
- 1280x720
- 1366x768
- 1440x900
- 720x480
- 1920x1080
- 1920x540



1 2

2 Scroll through the patterns using the + and - PATTERN buttons.
The pattern number appears on the display.

For example, to display the chess board, display PATTERN NUMBER 31

4 Your 840H HDMI Pattern Generator

Figure 1 and Table 1 define the **840H** *HDMI Pattern Generator* (Table 2 summarizes how to select each HDMI Output Resolution):

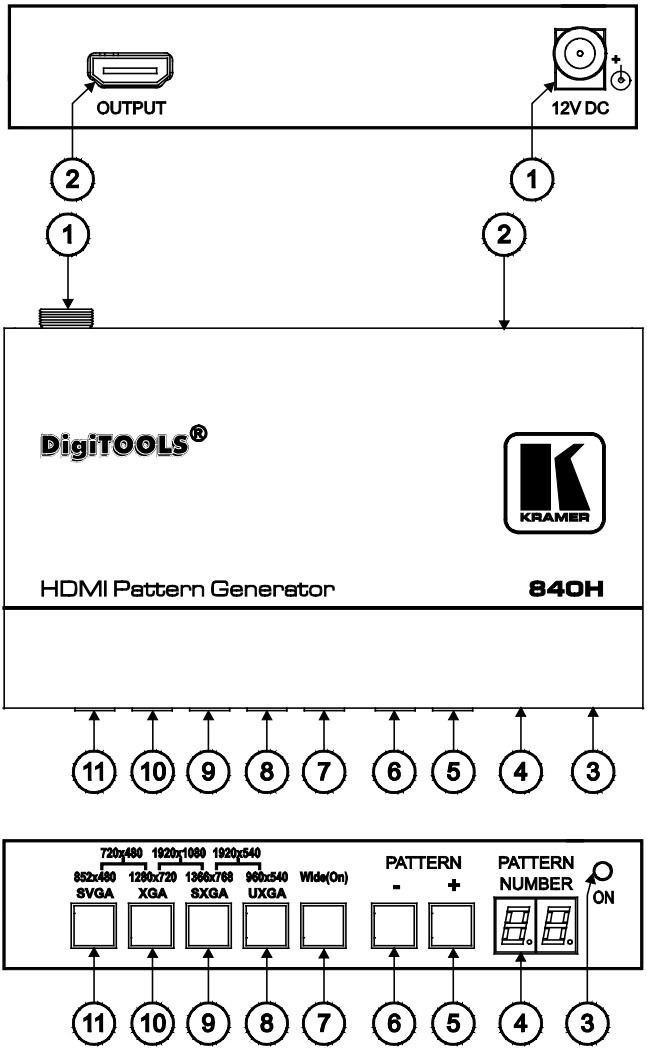


Figure 1: 840H HDMI Pattern Generator

Table 1: 840H HDMI Pattern Generator Features

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*OUTPUT* Connector	Connect to the HDMI acceptor
3	*ON LED*	Illuminates when receiving power
4	*PATTERN NUMBER* 7-segment Display	Shows the pattern number (from 00 to 31)
5	*PATTERN* + Button	Advances to the next pattern number
6	*PATTERN* – Button	Goes back to the previous pattern number
7	*Wide (On)* Button[1]	Displays a wide image and provides 7 extra resolutions when pressed together with one or two of these buttons: *SVGA*, *XGA*, *SXGA* and/or *1400x1050*
8	*1400x1050* Button[1]	Selects 1400x1050 when pressed. Selects 1440x900 when pressed together with the *Wide (On)* button. Selects 1920x540 when pressed together with the *SXGA* button and the *Wide (On)* button
9	*SXGA* Button[1]	Selects SXGA (1280x1024) when pressed. Selects 1366x768 when pressed together with the *Wide (On)* button. Selects 1920x1080 when pressed together with the XGA button and the *Wide (On)* button. Selects 1920x540 when pressed together with the *1400x1050* button and the *Wide (On)* button
10	*XGA* Button[1]	Selects XGA (1024x768) when pressed. Selects 1280x720 when pressed together with the *Wide (On)* button. Selects 720x480 when pressed together with the SVGA button and the *Wide (On)* button. Selects 1920x1080 when pressed together with the *SXGA* button and the *Wide (On)* button
11	*SVGA* Button[1]	Selects SVGA (800x600) when pressed. Selects 852x480 when pressed together with the *Wide (On)* button. Selects 720x480 when pressed together with the XGA button and the *Wide (On)* button

Table 2: Selecting the HDMI Output Resolutions

To select:	Press:
SVGA	SVGA
XGA	XGA
SXGA	SXGA
1400x1050	1400x1050
852x480	SVGA + Wide (On)
1280x720	XGA + Wide (On)
1366x768	SXGA + Wide (On)
1440x900	1400x1050 + Wide (On)
720x480	SVGA + XGA + Wide (On)
1920x1080	XGA + SXGA + Wide (On)
1920x540	SXGA + 1400x1050 + Wide (On)

1 Illuminates when pressed

5 Using Your 840H HDMI Pattern Generator

This section describes how to:

- Connect the **840H** *HDMI Pattern Generator* (see section 5.1)
- Operate the **840H** *HDMI Pattern Generator* (see section 5.2)
- Interpret each Pattern Number Definition (see section 5.3)

5.1 Connecting Your 840H HDMI Pattern Generator

To connect the **840H** *HDMI Pattern Generator*, do the following[1]:

1. Connect the OUTPUT connector to an HDMI acceptor, for example, a flat panel LCD display (as Figure 2 illustrates), or a projector or plasma screen.
2. Connect the 12V DC power adapter (wall transformer) to the 12V DC socket and connect the transformer to the mains electricity.

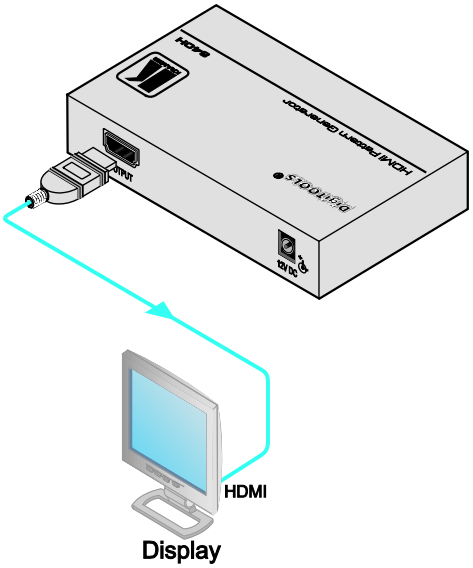


Figure 2: Connecting the 840H HDMI Pattern Generator

1 Switch OFF the power on the HDMI acceptor before connecting it to your 840H. After connecting your 840H, switch on its power and then switch on the power on the HDMI acceptor

5.2 Operating Your 840H HDMI Pattern Generator

Several patterns (see Table 3) are programmed into the **840H** *HDMI Pattern Generator*, in order to assess various aspects in the flat panel LCD display, projector, Plasma screen or cable. For example, the **840H** tests a:

- Flat panel LCD display[1] by testing if all the pixels illuminate with the correct amounts of light, linearity, and high frequency response
- Projector, verifying that the colors are as required, tuning the size and focus of the picture
- HDMI cable, checking the quality[2] of the colors, both separately and together
- Plasma screen, to check the black level of the plasma monitor (use *PATTERN* 00 to generate the black screen)

To operate the **840H** *HDMI Pattern Generator*, do the following:

1. Press the appropriate *PATTERN* button (*PATTERN* + to display the next pattern or *PATTERN* – to display the previous pattern) to generate the required pattern. The *PATTERN NUMBER* 7-segment Display shows the selected pattern number.
2. Observe the output on your flat panel LCD display, projector or plasma screen.

1 Which is built on a matrix of pixels, each pixel consisting of three components: R, G and B

2 For example, a fuzzy red color in the picture indicates a problem with the red wire

5.3 Interpreting Each Pattern Number Definition

Table 3 describes each of the 32 different Patterns:

Table 3: Pattern Number Definitions

PATTERN NUMBER		DEFINITION
00	Static	Black screen
01		75% saturated color bar
02		100% saturated color bar
03		Grayscale bar
04		Red screen
05		Green screen
06		Blue screen
07		Yellow screen
08		Cyan screen
09		Magenta screen
10		White screen
11		Gray screen
12		Red, green, blue ramps
13		White crosshatch on black background
14		Red crosshatch on green background
15		Red crosshatch on blue background
16		White squares
17		White dots
18		Active picture border
19		Centered round target and active picture border
20	Motion	Moving vertical line
21		Moving horizontal line
22		Aperture moving over colored background
23		Aperture moving over color bar background
24		Moving red ramp
25		Moving green ramp
26		Moving blue ramp
27	Static	Bounce
28		Multiburst
29		0/100 Vertical Split
30		0/100 Horizontal Split
31		Chess board

6 Technical Specifications

Table 4 includes the technical specifications:

Table 4: Technical Specifications[1] of the 840H HDMI Pattern Generator

OUTPUT:	1 HDMI connector
HDMI OUTPUT RESOLUTIONS:	SVGA (800x600), XGA (1024x768), SXGA (1280x1024), 1400x1050, 852x480, 1280x720, 1366x768, 1440x900, 720x480, 1920x1080, and 1920x540. All resolutions @ 60Hz
CONTROLS:	Buttons: PATTERN +, PATTERN –, 1400x1050, SXGA, XGA, SVGA, Wide (On)
POWER SOURCE:	12 VDC, 150mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 0.98" x 2.95"), W, D, H
WEIGHT:	0.3kg. (0.66lbs.)
ACCESSORIES:	Power supply, mounting bracket

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

  * FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

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